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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,597	01/22/2004	John R. Belcher	27644.99	5045

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EXAMINER
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OMGBA, ESSAMA

ART UNIT	PAPER NUMBER
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3726

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/762,597

Applicant(s)

BELCHER, JOHN R.

Examiner

Christopher K. Agrawal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/29/04; 8/6/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Power of Attorney*

1. Applicant's request for change of power of attorney with respect to communications of January 21, 2005 and January 24, 2005 is acknowledged.

### *Claim Objections*

2. Claim 1 is objected to because of the following informalities: The claim is incomplete as it ends only with: "wires; and". Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-6, 9 and 11-16 are are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy et. al. (U.S. 5,514,312) in view of Kitagawa et. al. (U.S. Patent No. 5,496,863).**

5. *Claim 1:* Hardy teaches a process for manufacturing a flexible pipe 11 comprising: forming an innermost layer 13 of a flexible pipe wherein the innermost layer 13 comprises a crosslinkable material (**Col. 14 lines 12-13**); crosslinking the material comprising the innermost layer (**Col 4 line 23**); and forming at least one supporting layer 14 around the innermost layer, wherein the supporting layer comprises a material

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made of wires (**Col. 14 lines 15-16; lines 30-32**) but does not teach the process wherein the crosslinking is performed by electron beam radiation.

6. Kitagawa teaches a process of crosslinking rubber or plastic moldings by electron beam radiation (**Abstract**).

7. It would have been obvious to one of ordinary skill in the art at the time of the invention to have exchanged the hydrolysis crosslinking of Hardy with the electron beam radiation of Kitagawa considering that said methods are well known fungible and equivalent means for performing crosslinking of materials such as polyethylene.

8. Claim 2: Hardy/Kitagawa teach the process of claim 1 as described above. Kitagawa also teaches the process wherein electron beam radiation is supplied by at least three electron beam accelerators arranged so that the entire surface of the innermost layer is exposed to the electron beam radiation (**Fig. 3; Col. 7 lines 14-20**).

9. Claim 3: Hardy/Kitagawa teach the process of claim 2 as described above. Kitagawa also teaches the process wherein the accelerators are radially spaced apart and arranged about 120 degrees apart with respect to each other (**Fig. 3**).

10. Claim 4: Hardy/Kitagawa teach the process of claim 2 as described above. Kitagawa also teaches the process wherein each accelerator is operated in a range of about 150 kilovolts to about 6 megavolts (**Col. 4 lines 59-60**).

11. Claim 5: Hardy/Kitagawa teach the process of claim 1 as described above. Kitagawa also teaches the process wherein the radiation is between about 3 megarads and about 35 megarads (**Col. 5 lines 10-15**).

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12. Claim 6: Hardy/Kitagawa teach the process of claim 1 as described above.

Kitagawa also teaches the process wherein the radiation is between about 8 megarads and about 20 megarads (**Col. 5 lines 10-15**).

13. Claim 9: Hardy/Kitagawa teach the process of claim 1 as described above.

Kitagawa also teaches the process comprising passing the innermost layer through an enclosure in which at least three electron beam accelerators are arranged so as to expose the innermost layer to electron beam radiation on its surface (**Fig. 3; Col. 7 lines 14-20**).

14. Claim 11: Hardy/Kitagawa teach the process of claim 1 as described above.

Hardy also teaches the process wherein the forming of the innermost layer further comprises coating a carcass with the innermost layer prior to the crosslinking (**Col. 12 lines 53-56**).

15. Claim 12: Hardy/Kitagawa teach the process of claim 11 as described above.

Kitagawa also teaches the process comprising: passing the innermost layer through an enclosure in which at least three electron beam accelerators are arranged so as to expose the innermost layer to electron beam radiation on its surface (**Fig. 3; Col. 7 lines 14-20**). Examiner notes that such a process would have been obvious regardless of whether a carcass is disposed within the innermost layer to be irradiated.

16. Claim 13: Hardy teaches a flexible pipe 11 comprising: an innermost layer 13

comprising a crosslinked polyethylene layer (**Col. 14 lines 12-15**); and at least one

supporting layer 14 around the innermost layer wherein the supporting layer comprises

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a material of wires (**Col. 14 lines 15-16; lines 30-32**) but does not teach the pipe wherein the layer was crosslinked by exposure to electron beam radiation.

17. Kitagawa teaches crosslinking rubber or plastic moldings by electron beam radiation (**Abstract**).

18. It would have been obvious to one of ordinary skill in the art at the time of the invention to have exchanged the hydrolysis crosslinking of Hardy with the electron beam radiation of Kitagawa considering that said methods are well known fungible and equivalent means for performing crosslinking of materials such as polyethylene.

19. Claim 14: Hardy/Kitagawa teach the flexible pipe of claim 13 as described above. Hardy also teaches the flexible pipe comprising a metal carcass on which the innermost layer is formed prior to crosslinking (**Col. 7 lines 39-43; Col. 12 lines 54-55**).

20. Claim 15: Hardy/Kitagawa teach the flexible pipe of claim 13 as described above. Hardy also teaches the flexible pipe having a diameter of between 50 mm and 500 mm (**Col. 8 lines 35-40**).

21. Claim 16: Hardy/Kitagawa teach the flexible pipe of claim 13 as described above. Hardy also teaches the flexible pipe having allowable internal pressures of between 50 bar and 1000 bar (**Col. 6 lines 3-4**).

22. **Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy et. al. (U.S. 5,514,312)/Kitagawa (U.S. Patent No. 5,496,863) in view of McKellop et. al. (U.S. Patent No. 6,165,220).**

23. Claim 7: Hardy/Kitagawa teach the process of claim 1 but do not specifically teach the process wherein the irradiation is carried out from between 0°C and 60°C.

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24. McKellop et. al. teach crosslinking of polyethylene by irradiation by e-beam at room temperature. Examiner notes that average room temperature of 21.1°C falls within the claimed range of 0°C to 60°C.

25. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have performed irradiation at a temperature between 0 and 60 degrees Celsius considering that it is known to perform irradiation at room temperature of 20 degrees Celsius.

26. Claim 8: Hardy/Kitagawa teach the process of claim 1 but do not teach the process wherein the crosslinking results in the innermost layer having a gel content between about 50% and 94%.

27. McKellop et. al. teaches a method of crosslinking by electron beam wherein the crosslinking results in the innermost layer having a gel content between about 50% and 94% (**Fig. 4**) for the purpose of obtaining the desired resiliency.

28. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have performed crosslinking to the extent that gel content is modified to between about 50% and 94% for the purpose of obtaining desired resiliency.

**29. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy et. al. (U.S. 5,514,312)/Kitagawa (U.S. Patent No. 5,496,863) in view of Salyer (U.S. Patent No. 4,908,166).**

30. Hardy/Kitagawa teach the process of claim 9 as described above but do not teach the process further comprising passing the pipe through the enclosure repeatedly until a desired level of crosslinking is achieved.

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31. Salyer teaches a method of performing multiple passes through an electron beam until the desired level of crosslinking is achieved (**Col. 6 lines 55-58**).

32. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have performed multiple passes through an electron beam for the purpose of achieving the desired level of crosslinking.

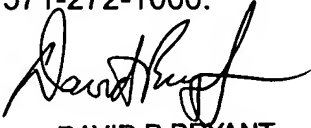
***Conclusion***

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher K. Agrawal whose telephone number is (571) 272-3578. The examiner can normally be reached on Mon-Fri 8:30AM-5:00PM.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

35. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CKA

  
DAVID P. BRYANT  
SUPERVISORY PATENT EXAMINER